

# Quarterly Epidemiologic Report

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*April – June 2008*

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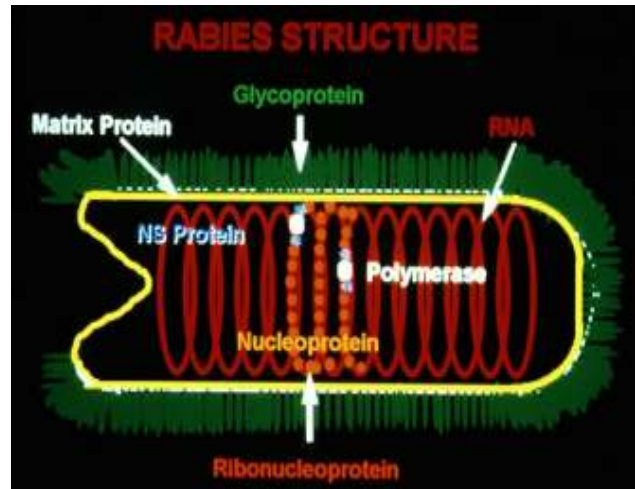
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## Disease of the Quarter: Rabies

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Rabies is a deadly zoonotic disease caused by RNA viruses in the Family Rhabdoviridae, Genus Lyssavirus.<sup>1,2</sup> Rabies virus attacks the central nervous system and causes acute, progressive encephalomyelitis that is almost always fatal. All species of mammals are susceptible to rabies virus; however,



there are a few species in particular that serve as important reservoirs for the disease.<sup>1,3</sup> These species include wild animals such as bats, skunks, foxes, raccoons, bobcats, coyotes, etc. Cats, dogs and livestock can also become infected with rabies, if they have not been vaccinated and are bitten by rabid wild animals.<sup>1,3</sup>

Rabies virus is transmitted when saliva of an infected animal is passed to an uninfected animal. The most common mode of rabies virus transmission is through the bite from an infected animal. Other routes of transmission have been documented, which are called non-bite exposures. These include scratches, abrasions, open wounds, or mucous membranes contaminated with saliva or other potentially infectious material (such as brain tissue or cerebrospinal fluid) from a rabid animal. Another potential non-bite exposure can be inhalation of aerosolized rabies virus; however, this type of exposure is very rare and is more applicable to laboratory workers and persons exposed in caves where rabid bats nest.<sup>1</sup>

## Epidemiology of Rabies in the United States



Wild animals are the most important potential source of infection for both humans and domestic animals in the United States.<sup>2</sup> In 2006, wild animals accounted for 92% of reported cases of rabies.<sup>1,2</sup>

The most frequently reported rabid wildlife species were raccoons, bats, skunks and foxes.<sup>1,2</sup> Outbreaks of rabies infections in terrestrial mammals like raccoons, skunks, foxes and coyotes are found in broad geographic regions across the United States (See Figure 1).<sup>1</sup>

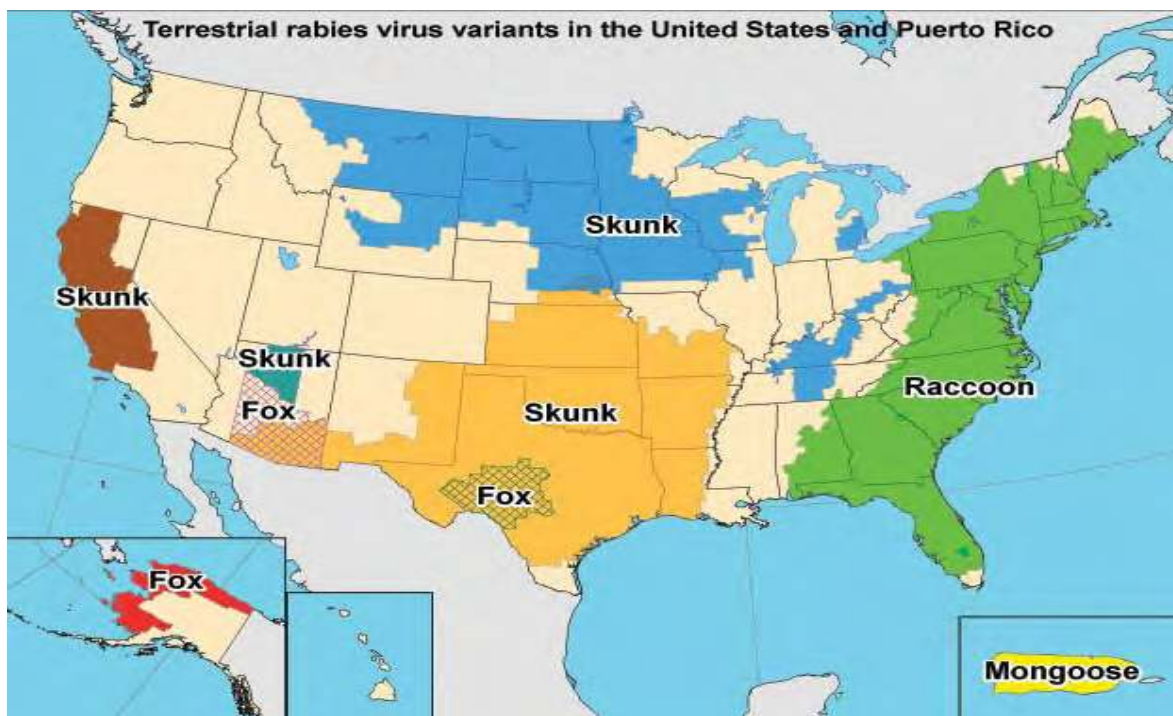


Figure 1—Distribution of major rabies virus variants among wild terrestrial reservoirs in the United States and Puerto Rico.<sup>2</sup>

Among domestic animals, improved canine vaccination programs and stray animal control has dramatically decreased rabies in domestic animals in the United States post

World War II. In 2006, domestic species accounted for 8% of all reported rabies cases in animals in the United States, with more reports of rabid cats than cattle or dogs.<sup>2</sup>

The number of rabies cases in humans has declined significantly in this century.<sup>1,2</sup> A century ago, there were 100 or more reported cases of rabies in humans per year and now there are two to three cases per year.<sup>2</sup> The decline is attributed to animal control and vaccination programs which began in the 1940s, oral rabies vaccination programs, which began in the 2000's and have eliminated domestic dogs as reservoirs of rabies in the United States, and the development of effective human rabies vaccines and immunoglobulins.<sup>1,2</sup> In 2006 and 2007, there were three cases and one case of rabies in humans, respectively. Three out of the four cases from 2006 and 2007, were from bat exposures, and one case was from a dog exposure in the Philippines, where dog rabies is enzootic.<sup>1</sup> So far, there has not been any reported cases of human rabies in the United States in 2008, according to the Centers of Disease Control and Prevention (CDC).

### **Epidemiology of Rabies in Maricopa County**

Epidemiology of rabies in animals in Maricopa County follows similar trends as the epidemiology of rabies in humans in the United States. In recent years, rabies in bats, foxes and coyote species have been reported frequently in Maricopa County. As of July 18<sup>th</sup>, 2008, Maricopa County has had 14 lab confirmed rabid wild animals, of which 13 were bats and one was a coyote.<sup>3</sup>

Domestic animals, such as dogs and cats are low risk for rabies in Maricopa County. There has not been a case of a rabid dog or a rabid cat in 35 years in Maricopa County.<sup>3</sup>

Furthermore, there has not been a case of rabies in a human in over 20 years in Arizona.<sup>3</sup> Exposures to rodents and rabbits are not considered a risk for rabies in Arizona.

## **Diagnosis of Rabies**

All animal bites and suspected cases of rabies in animals and humans must be reported to Maricopa County Department of Public Health (MCDPH). MCDPH can assist in carrying out the rabies risk assessment and assist in assessing if rabies vaccination is needed. It is important to remember that there is no cure for rabies after the onset of symptoms. Death is expected within days of the onset of symptoms for animals and humans with rabies. Hence, it is highly recommended that MCDPH is contacted for a rabies risk assessment. In high risk exposure situations rabies can be prevented by administration of post-exposure prophylaxis immediately after exposure. Pre-exposure prophylaxis is available for individuals who are at high risk for rabies exposure (see prevention section for more information on post-exposure prophylaxis and pre-exposure prophylaxis).

### In Animals:

Diagnosis of rabies in an animal requires testing of the brain tissue from the suspected rabid animal. The test can only be performed post-mortem (after the animal is dead).<sup>1</sup> Rabies testing is highly recommended when there is an exposure from a suspected rabid wild animal. An exposure from a domesticated animal from the United States does not warrant euthanasia of the animal, in most cases, especially if the domestic animal is vaccinated. The domestic animal can be quarantined and monitored for clinical

rabies symptoms. The number of quarantine days for the domestic animal varies depending on the animal vaccination status and epidemiology of rabies in the geographic location of the animal. Please contact your local animal control and public health department to report the bite and for information on animal quarantine.

#### In Humans:

Early symptoms of rabies in humans are nonspecific, consisting of fever, headache, and general malaise. As the disease progresses, neurological symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation, difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of symptoms.<sup>1</sup>

Several tests are necessary to diagnose rabies ante-mortem (before death) in humans; no single test is sufficient. Tests are performed on samples of saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck. Saliva can be tested by virus isolation or reverse transcription followed by polymerase chain reaction (RT-PCR). Serum and spinal fluid are tested for antibodies to rabies virus. Skin biopsy specimens are examined for rabies antigen in the cutaneous nerves at the base of hair follicles. Please contact Maricopa County Department of Public Health for assistance with rabies testing in humans.<sup>1</sup>

### **Prevention**

The Arizona Department of Health Services recommends the following precautions to avoid exposure to rabies<sup>3</sup>:

- Keep people and pets away from wild animals. Never leave pet food in your yard because it will attract wild animals. Do not pick up, touch, or feed wild or unfamiliar animals, especially sick or wounded ones. If you have been bitten or scratched, or had contact with the animal, wash the wound or area well with soap and water, and report it immediately to animal control or health officials.
- Do not “rescue” seemingly abandoned young wild animals. Usually, the mother will return. If the mother is dead or has not returned in many hours, call the Arizona Game and Fish Department.
- Vaccinate all dogs and cats against rabies. Pets should be kept in a fenced yard.
- Take precautions when camping, hunting or fishing. Avoid sleeping on the open ground without the protection of a closed tent or camper. Keep pets on a leash and do not allow them to wander. Wear impermeable gloves when skinning carcasses.
- Do not disturb roosting bats. If you find a bat on the ground, don’t touch it. Report the bat and its location to your local animal control officer or health department. Place a box over the bat to contain it. Be careful not to damage the bat in any way since it must be intact for rabies testing.
- Teach children not to handle or touch sick or injured animals including bats.

### **Pre-Exposure Rabies Prophylaxis**

Pre-exposure prophylaxis (Pre-EP) is recommended for individuals who are at high risk of rabies exposures, such as wildlife workers, veterinarians and lab workers working with rabies virus, by the Center of Disease Control and Prevention. Pre-EP is also recommended for individuals who are travelling abroad to areas where rabies is enzootic among both wild animals and domestic animals. However, due to limited supply of rabies vaccination, pre-exposure vaccination is currently unavailable.<sup>1</sup> Please contact Maricopa County Department of Public Health for more information regarding pre-exposure prophylaxis. Pre-exposure prophylaxis is a series of three injections, on days 0, 7, and 14.



## Post-Exposure Rabies Prophylaxis

***Rabies prophylaxis is a medical urgency not medical emergency.***

Therefore, those individuals who are potentially exposed to a suspect rabid animal should contact Maricopa County Department of Public Health at 602-747-7111 for a rabies risk assessment and assistance with obtaining rabies prophylaxis. Please see Appendix 1 and Appendix 2 for information on how to conduct rabies risk assessment. Rabies post-exposure prophylaxis (PEP) includes administration of rabies vaccine and human rabies immune globulin. Rabies vaccine is a series of five injections, days 0, 3, 7, 14, and 28, if the individual is previously not vaccinated. Table 1 below summarizes the rabies post-exposure management. Immediate bite wound treatment and cleaning is highly recommended along with tetanus vaccine update to control bacterial infections.

**Table 1. Rabies post-exposure management<sup>3</sup>.**

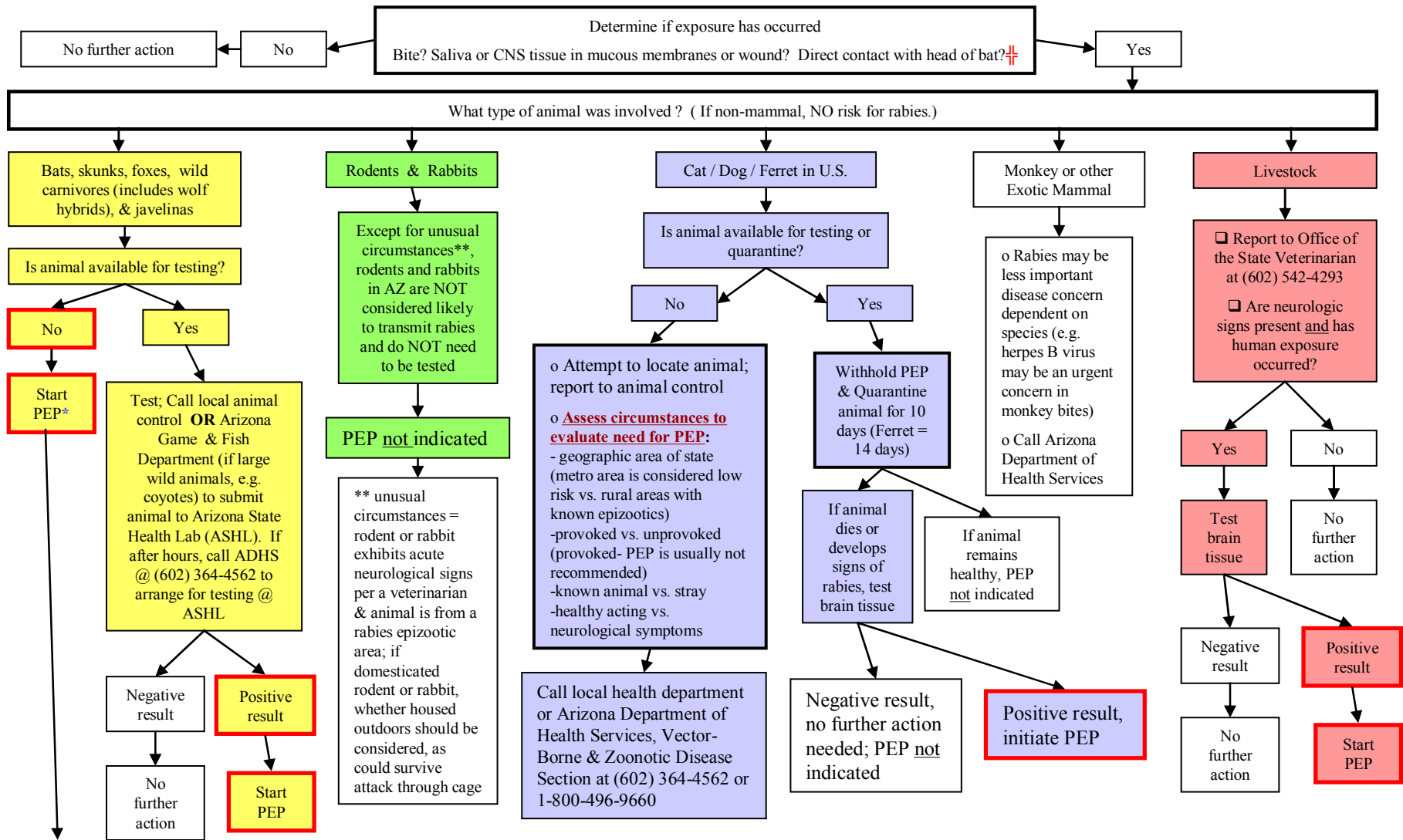
<b>Treatment Regimen for Patient <u>Not</u> previously vaccinated against rabies</b>						<b>Treatment Regimen for Patient previously vaccinated* against rabies</b>					
Day 0 = date of initiation of treatment						Day 0 = date of initiation of treatment					
Day	0	3	7	14	28	Day	0	3	7	14	28
HRIG	x					<b>HRIG</b>	<b>NOT INDICATED</b>				
Rabies Vaccine	x	x	x	x	x	Rabies Vaccine	x	x	no	no	no
If HRIG is not given on day 0, HRIG may be administered within 7 days after rabies vaccine is first administered						* <b>Previously vaccinated</b> = person with history of a complete pre-vaccination (3 doses) with Human Diploid Cell Vaccine (Imovax), Purified Chick Embryo Cell Vaccine (RabAvert), or rabies vaccine adsorbed (RVA); OR person with prior vaccination with any other type of rabies vaccine (usually prior to c.1980) <b>with a prior</b> documented history of antibody response to rabies vaccination					

## References

1. Centers for Disease Control and Prevention (2008). Rabies. Available from <http://www.cdc.gov/rabies/>. Accessed 07/15/2006.
2. Centers for Disease Prevention and Control. Human Rabies Prevention – United States, 2008: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2008; 57(Early Release):1-26, 28.
3. Arizona Department of Health Services (2008). Rabies. Available from <http://azdhs.gov/phs/oids/vector/rabies/>. Accessed 07/15/2006.

# Appendix 1. Rabies Risk Assessment Algorithm.<sup>3</sup>

## Arizona Department of Health Services Rabies Risk Assessment For Human Exposure To Animals



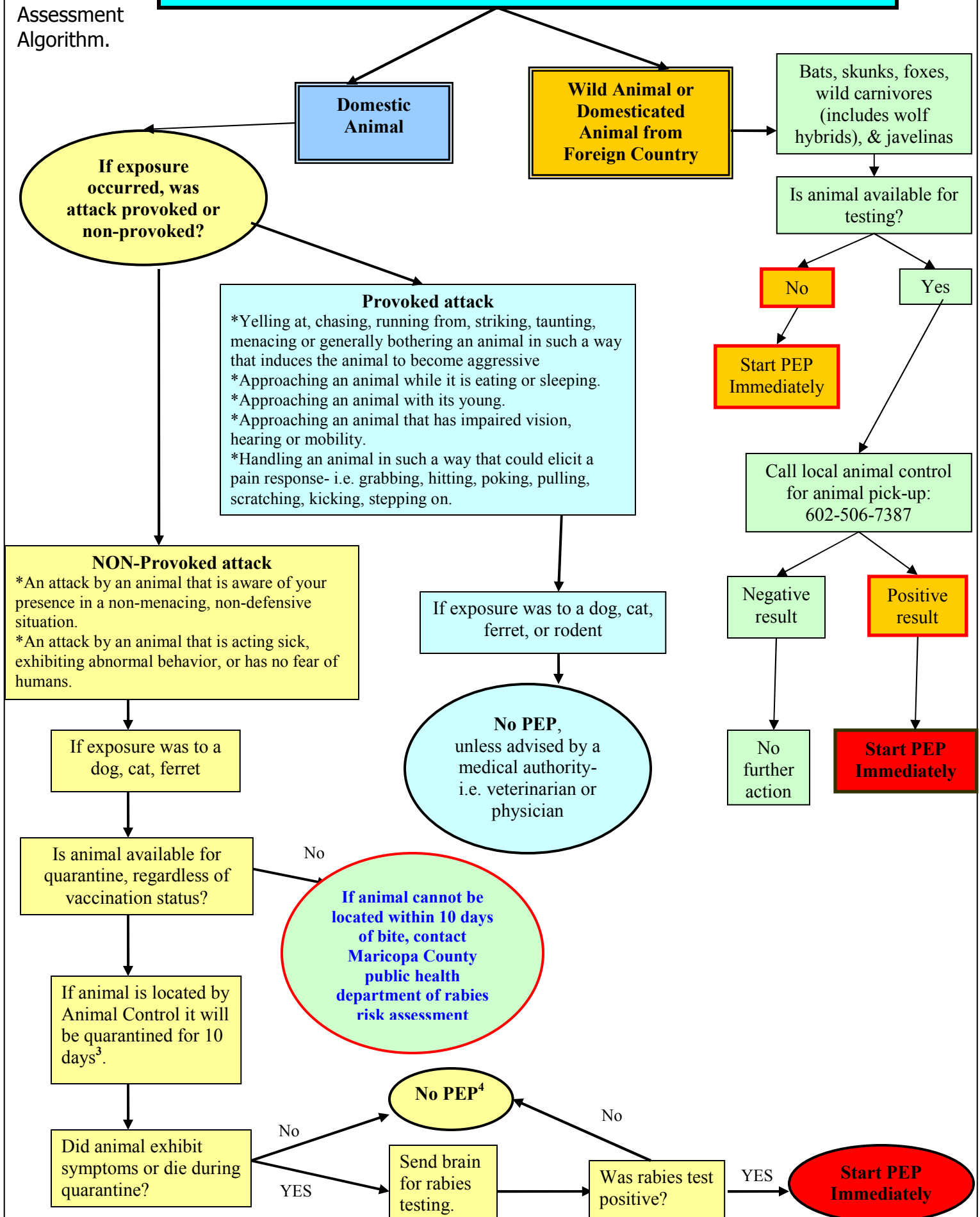
\*There is no quarantine period established for wild animals, therefore **post exposure prophylaxis (PEP)** or testing brain of involved animal are the only appropriate measures if an exposure occurs.

† Bites by high rabies incidence wildlife species such as bats, skunks, foxes, and to a lesser extent – bobcats and coyotes, warrant emergency testing after hours. PEP should be considered when direct contact between a human and a bat has occurred, unless exposed person is an adult and can be certain that a bite, scratch, or mucous membrane exposure did not occur. Persons who have been sleeping in a room with a bat, and persons with mental impairment or children who are found playing unsupervised with a rabid bat, should be considered for prophylaxis.

If additional questions, call Maricopa County Department of Public Health at 62-506-6767, Monday – Friday 8 AM – 5 PM or 602-747-7411 on Holidays and afterhours.

**Appendix 2.**  
Rabies Risk  
Assessment  
Algorithm.

**Exposure (Direct contact of mucous membrane, open wound or non-intact skin with saliva or CNS tissue. Any penetration of the skin by teeth.)**



**Please report ALL suspected rabies cases and ALL animal bites!**



**To report a suspected rabies case or to receive a rabies risk assessment**

<b>M-F 8AM–5PM</b>	<b>602-506-6767</b>
<b>Holidays &amp; after hours</b>	<b>602-747-7111</b>

**To report a suspected rabies case or to receive a rabies risk assessment**

<b>24/7</b>	<b>602-506-7387</b>
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**Maricopa County Department of Public Health Epidemiology  
4041 N Central Avenue Suite 600 Phoenix, AZ 85016 (602) 372-2600**



## Maricopa County

### **2008 WEST NILE VIRUS SEASON HAS BEGUN**

West Nile Virus (WNV) season is upon us already. Maricopa County Department of Public Health requests to report all cases of WNV disease either to public health department at 602-506-6767 during business hours (8am – 5pm) or to 24/7 Disease Reporting Line at 602-747-7111

Health care providers should strongly consider testing for WNV or other Arboviral diseases like St. Louis encephalitis (SLE) when patients fit the following profile:

- ❖ **Viral encephalitis**
- ❖ **Aseptic/viral meningitis, especially with neuroinvasive symptoms**
- ❖ **Acute flaccid paralysis or Guillain-Barre Syndrome of unknown etiology, with or without presence of viral meningitis or viral encephalitis.**
- ❖ **Fever or rash cases of unknown origin fitting WNV clinical description**

**\*\*\*Reporting all suspected and confirmed cases of WNV disease is crucial in order to determine, monitor, and abate locations of potential mosquito activity.\*\*\***

IgM antibody in the serum or in the CSF using IgM antibody-capture, enzyme-linked immunosorbent assay (MAC-ELISA) is the most efficient diagnostic method for detecting WNV.

- **Serum should be collected within 8 – 14 days of illness onset**
- **CSF should be collected within 8 days of illness onset using**

**\*\*\* Positive IgG alone is not diagnostic for WNV illness! \*\*\***

Please Note: Providers should be vigilant in reporting cases and requesting IgM ELISA sampling of serum or CSF. Specimens can be sent directly to the Arizona State Health Laboratory (ASHL), which conducts serologic testing for West Nile virus WNV and other mosquito-borne viruses like St. Louis encephalitis (SLE) (see attachments).

- ❖ For sample collection, reporting, Maricopa County Department of Public Health contact and general information about West Nile Virus:  
[http://www.maricopa.gov/Public\\_Health/HotTopics/wnv/default.aspx](http://www.maricopa.gov/Public_Health/HotTopics/wnv/default.aspx)
- ❖ Physician Fact Sheet for West Nile Virus disease can be found at the following site:  
[http://www.cdc.gov/ncidod/dvbid/westnile/resources/fact\\_sheet\\_clinician.htm](http://www.cdc.gov/ncidod/dvbid/westnile/resources/fact_sheet_clinician.htm)

Accompanying this document please find:

- ❖ Updated Arbovirus Investigation and Reporting Form
- ❖ Pesticide Poisoning Surveillance Report Form
- ❖ Lab Submission Instruction

For routine disease reporting during regular business hours, call **602-506-6767**. For disease reporting during regular business hours and after-hours, weekends and holidays call the 24/7 Disease Reporting Line at **602-747-7111**

## 07-08 Influenza Season -----

**\*\*VACCINATION\*\* INFECTION CONTROL \*\*SURVEILLANCE\*\***



## SURVEILLANCE

During the 2007-2008 influenza season, MCDPH continues to work with local hospitals, urgent care centers, and health care centers to monitor weekly levels of influenza-like illness. Additionally, MCDPH has been collecting weekly absenteeism information from local participating schools. The following is a weekly summary of lab confirmed and ILI

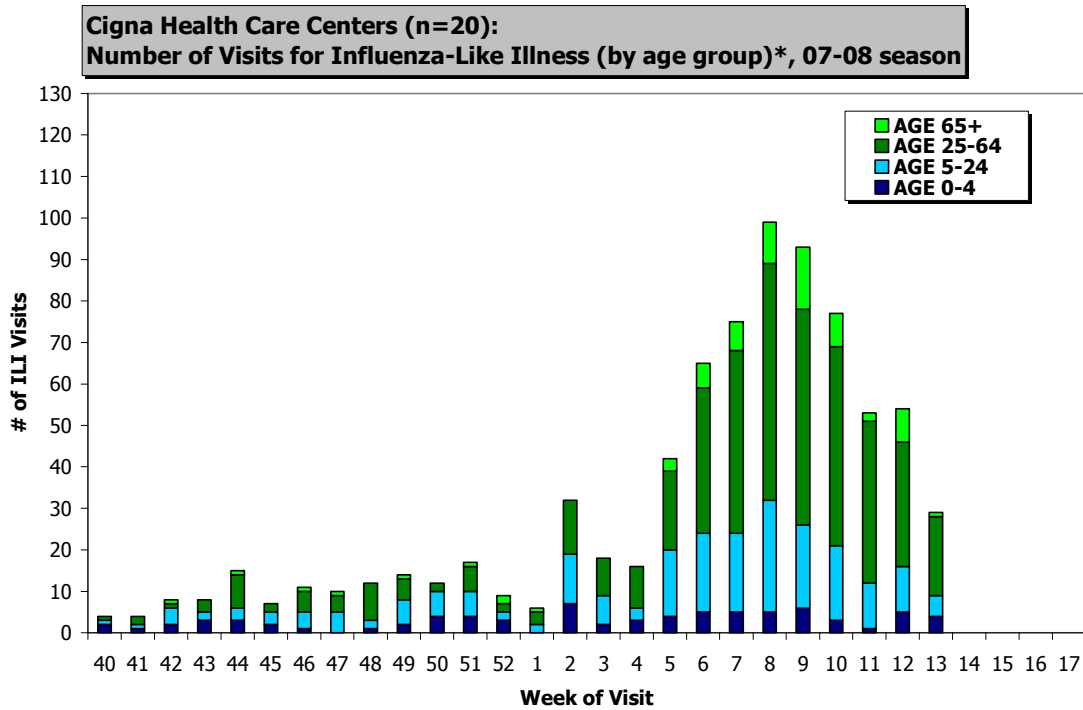
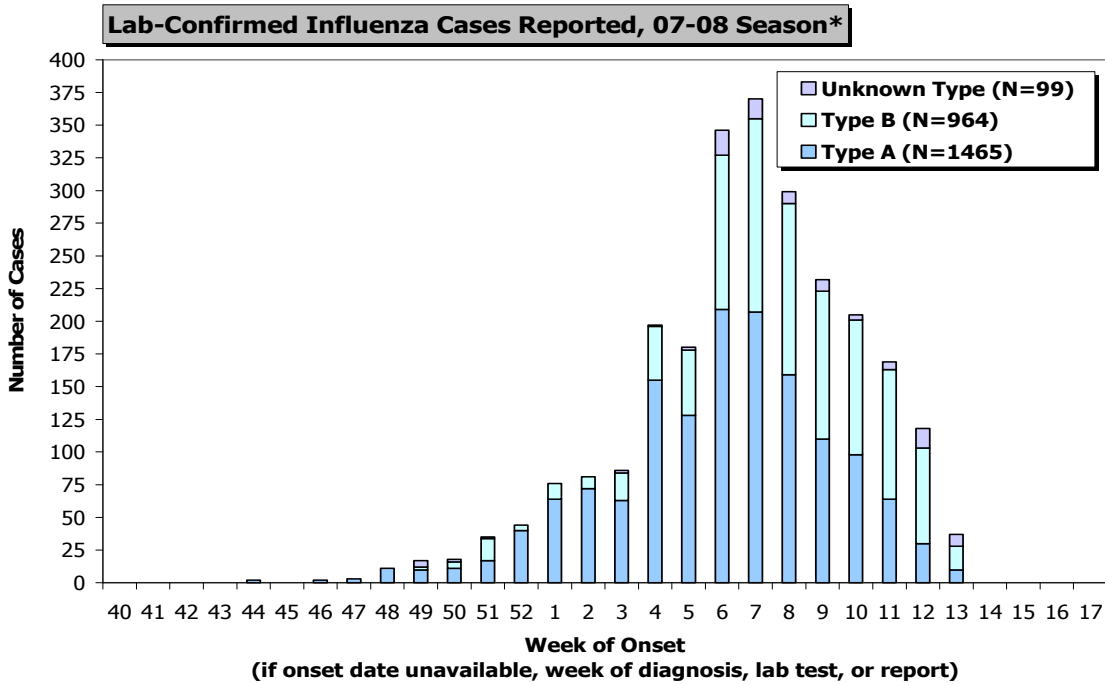
reports from week 40 (starting 9/30/07) through week 20 (starting 5/12/08). ([http://www.maricopa.gov/Public\\_Health/epi/flu.aspx](http://www.maricopa.gov/Public_Health/epi/flu.aspx))

MCDPH greatly appreciates the efforts of our community surveillance partners. If you are interested in participating in the seasonal Influenza Surveillance Program, or if you have questions regarding reporting, please call or email  
Derek Steinke: (602) 372-2622  
[DerekSteinke@mail.maricopa.gov](mailto:DerekSteinke@mail.maricopa.gov).



## 07-08 Influenza Season -----

**\*\*VACCINATION\*\* INFECTION CONTROL \*\*SURVEILLANCE\*\***





<b>Maricopa County Communicable Disease Summary</b>		
<b>Confirmed and Probable Cases Reported in 2008</b>		
<b>DIAGNOSIS</b>	<b>FIRST QUARTER</b>	<b>SECOND QUARTER</b>
Amebiasis	2	2
Aseptic Meningitis (Viral)	90	106
Basidiobolomycosis		
Botulism		1
Brucellosis	1	
Burkholderia		1
Campylobacteriosis	78	227
Clostridium Difficile		1
Coccidioidomycosis		
Cryptococcosis		1
Cryptosporidiosis	5	8
Cysticercosis		
Dengue	1	
Diarrhea, Nausea, Or Vomiting	9	1
E. Coli	16	3
E. Coli O157:H7	4	5
Ehrlichiosis		1
Encephalitis: Bacterial		1
Encephalitis: NOS	1	1
Encephalitis: Viral	1	7
Giardiasis	12	11
H. Flu Invasive Disease	24	11
Hemolytic Uremic Syndrome (Hus)	1	3
Hepatitis A	6	12
Hepatitis B	226	305
Hepatitis C	28	
Influenza	238	7
Kawasaki Syndrome	11	8
Legionellosis	3	6
Listeriosis		1
Lyme Disease	1	1
Malaria	1	1
Meningitis: Bacterial Other	1	1
Meningococcal Invasive Disease		2
Mumps	1	
Non-Reportable Disease	6	8
Norovirus	16	19
Pertussis	78	41
(Continued)		

<b>DIAGNOSIS</b>	<b>FIRST QUARTER</b>	<b>SECOND QUARTER</b>
Q Fever		
Rash	1	5
Respiratory Syncytial Virus (RSV)	26	
Rocky Mountain Spotted Fever		
Salmonellosis	85	154
Scabies	2	
Shigellosis	36	57
Staphylococcal Infection	215	260
Streptococcal Group A Infection	40	23
Streptococcal Group B Infection	12	10
Streptococcal Infection Other		1
Streptococcus Pneumoniae Infection	258	109
Toxic Shock Syndrome		
Typhoid Fever	2	
VRE (Vanc Res Enterococcus)	377	38
Varicella	216	90
Vibrio Infection		
West Nile Virus	1	
Yersiniosis		1
<b>All</b>	<b>2132</b>	<b>1551</b>

Note: This table includes *confirmed* and *probable* cases listed by CDR date, which is equivalent to the date of onset or next available date if onset date is unknown. This date may differ from ADHS data which is selected by date of report to the State.

**For a complete list of reporting  
requirements for communicable diseases:**

[http://www.maricopa.gov/Public\\_Health/ControlPrevention/Communicable/default.aspx](http://www.maricopa.gov/Public_Health/ControlPrevention/Communicable/default.aspx)

**To report communicable diseases, unusual health occurrences, and public health emergencies please call the appropriate number below**

	<b>Business Hours M-F 8am—5 pm</b>	<b>After 5pm</b>
Animal bite reports	(602) 506-7387	(602) 506-7387
Communicable diseases	(602) 506-6767	(602) 747-7111
Death certificates (pager)	(602) 506-6805	(602) 450-9982
Funeral homes, human remains (pager)		(602) 229-9315
HIV (reports)	(602) 506-6426	
Public health emergencies	(602) 747-7111	(602) 747-7111
Rabies	(602) 747-7111	(602) 747-7111
STDs (other than HIV)	(602) 506-1687	
Tuberculosis	(602) 506-5065 or 372-1408	(602) 747-7111
West Nile Virus Hotline	(602) 506-0700	(602) 506-0700

To change your name or address or to be removed/added to this mailing list, please email Cheryl Phillips at:  
[cherylphillips@mail.maricopa.gov](mailto:cherylphillips@mail.maricopa.gov) or call (602) 372-2605

For any questions or comments regarding this report, please send an email to  
[epidemiology@mail.maricopa.gov](mailto:epidemiology@mail.maricopa.gov)